APPENDIX VI The Soils of Sinkiang

134 THE SOILS of Sinkiang have been formed by mechanical weathering caused by shortage of rainfall, dryness of the air, and high variation between day and night temperatures. Alkaline soils have formed where water seeping through alluvial fans along the edges of the foothills has deposited soluble salts on flat land below the fans.

Brown forest soils and the grassland soils of high meadows are found on the upper slopes of the Tien Shan. Going down the northern slopes of the Tien Shan, chestnut soils are found on the gentle slopes at the base of the range, succeeded farther out on the plain and in the depressions by alkaline soils, desert soils, and sand dunes. On the southern, drier side of the range, the vertical distribution is much more irregular. At the higher altitudes there is less brown forest soil and grassland soil than on the northern side. The foothill ranges are covered with barren rocks on exposed slopes, but there are light-colored chestnut soils and alkaline soils in hollows among the hills. In areas lying between drifting deserts and boulder fans the higher soils are alluvial, the lower soils alkaline; and farthest out from the mountains there stretch desert soils and sand dunes.

The northerly slope of the Kunlun, overlooking the Tarim Basin, matches the southerly face of the Tien Shan, except that there are no forests high up on the Kunlun and the soils found there are chiefly immature. There is no information about the soils of the Altai or northern rim of Jungaria.

Chestnut soils from lower mountain slopes on the southern edge of Jungaria and in the Kulja plain vary from dark to light brown.

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1: Lattimore H-4 (no date) 1950 AI 1 Sinkiang AI 1

Their typical natural cover is short grass. Thin chestnut soils are suitable only for grazing, but thick layers permit dry farming. Alkaline soils are found in poorly drained lowlands and where irrigated alluvial soils have been alkalinized. Their crop productivity is low. They have been noted particularly between Kharashahr and Bugur, in Kharashahr, Yangi-Hissar, and Yarkand, and on both sides of the Khotan Darya and the Tarim. Desert soils which are low in organic matter but can be utilized for farming if irrigated are found in the oases of Komul, Pichang, Turfan, and Toksun.

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3: Skrine G-3 (1922-1924) 1926 All Sinkiang All

quality not seen in lower snows, makes it an impressive spectacle. The wide floor of the Sariqol Valley is dotted with homely little farmsteads, each nestling snugly beside a clump of willows. The soil is remarkably good; wheat, barley and oats sown in May are reaped in October, and two crops of lucerne are usually taken. Sweet-smelling purple orchises, gentians, vetches of all colours and primulas of large size line the paths in June and July.

The Amban of Sariqol, our first acquaintance in the Chinese official world, was not a favourable example of his kind. He was an opium-smoker, and shortly after our arrival at Kashgar was relieved of his post. I called on him my first morning, as I was determined to be polite in spite of his having practically ignored us the previous day. As I arrived only half an hour after the appointed time, nothing was ready, and the Aqsaqal and I had to stand in the waiting-room of the "Yamen" or magistrate's quarters amid an interested crowd of bottle-washers and hangers-on, while a servant hurriedly brought in a small table, two chairs and some uninviting-looking sweetmeats. Finally the Amban came in and we both sat down. Pale green tea tasting strongly of hot water was our tipple; conversation, I regret to say, somewhat flagged, the old Amban being obviously under the influence of opium while my style was cramped by the "gallery" standing close around and following every syllable, every mouthful. I was relieved to be able to escape after twenty minutes or so of this entertainment.

The Amban was in better form when he returned my call the same afternoon, and did his best to make amends for his previous remissness. This encouraged us to invite him, his young son, the Commandant of the Garrison and his adjutant, and the Pir of the Maulais to tea the following afternoon. I found out afterwards that it was a mistake to ask the Pir, as the Chinese seldom sit at table with their subjects. D. spent the whole morning making scones and sweets, and the party was a great success. Conversation flourished, the Amban being quite talkative. He spoke in Chinese to the Adjutant, who translated into Turki to Nadir Beg, who translated into Persian to me and I into English to D. So:—

AMBAN (to Adjutant): How old is the *Tai-tai* (lady)?
ADJUTANT (to Nadir Beg): How old is the *Khanum*?
NADIR BEG (to me): How old is the *Mem-sahiba*?
I (to D.) How old are you?

3: Skrine G-3 (1922-1924) 1926 All Sinkiang All

peaches while we watched the sunset glow fade upon rich fields of maize and peas, on cosy little farms nestling under clumps of tall bushy poplars and on warm yellow river-bluffs along the foot of which springs of pure water bubbled up among the meadows.

By mid-day on 18th July the hills on either side of us had sunk to insignificance and we came to a place where the Chinese of former days had built, *more suo*, a wall across the open valley, a wall the ends of which were quite in the air, and which could never have been defensible, even when first built. Here, at a small mediæval-looking fort called Chong (Big) Qaraul, an amiable Chinese Muhammadan *qaraulchi* or barrier officer fed us on melons and apricots on a platform under spreading planes. Before us extended a vast indefinite expanse, pale yellow and brown with wide shadows lying on it where the oases were; nearest to us, a long line of trees some ten miles away marked Ighiz Yar, our halting-place. We thrilled to think that we were looking upon the great plain of Central Asia, the mighty belt of oasis-fringed desert which stretches for 2,000 miles from Kashgar to the mountains of Inner Mongolia.

Ighiz Yar ("The High Bluff") proved to be a pleasant stretch of cultivated land dotted with farmsteads of mud-brick joined by leafy lanes down which ran brooks of clear water. Except that the soil was obviously far more fertile—the loess of Kashgaria is as a matter of fact one of the most fertile soils in the world—it might have been a Persian village. Our lodging proved to be a small house near the lower end of the oasis, consisting of one very large room with a raised floor and a large square skylight, and a small windowless room opening out of it. There was a third chamber, but this was not available as the entire family moved into it when we took possession; as their ingress and egress was through the big room, the privacy of the latter left something to be desired. Our two rooms opened on to a courtyard in which (as the house boasted no garden) our retinue took up their quarters; they also opened on a cow-byre.

Harding caught us up at Ighiz Yar, and next day all four of us went on together to Yangi Hissar. The (Hindu) British Aqsaqal of the place, a wealthy Shikarpuri banker called Ratan Chand, sent a smart buggy to meet us half-way, and in this D. and I, drawn by the fieriest of Ferghana stallions, performed the rest of the march in what must surely have

3: Skrine G-3 (1922-1924) 1926 All Sinkiang All

partially masked them! From south right round by west to north-east they stretched, the walls that screen Kashgar from the rest of Asia. To the north indeed the snowless outer ranges of the Tien Shan were not impressive, and higher peaks could only here and there be espied beyond. But right across the south-western horizon, sixty to a hundred miles away, stretched a mighty rampart of eternal snow, here irregular and serrated, there smooth-topped and broken only by the very highest massifs, which stood out like the marble bastions of a Citadel of the Gods. It was the Kashgar Range, a hundred miles long and from 18,000 to more than 25,000 feet high, which walls off the lofty table-land of the Pamirs from deserts and oases of the Tarim Basin.

It is difficult to analyse the fascination of lofty mountains seen afar off; so much depends upon their associations. Whether consciously or unconsciously, the climber thinks of the arêtes and chimneys and ice-slopes that await his scaling; the naturalist, the geologist and the surveyor of the new and varied world they offer, and the stalker of the mighty heads that surely lurk among their inmost sanctuaries. But to none do "the Hills" mean more than to Western dwellers in Eastern lands; and not only to those for whom they are a relief from the soul-destroying monotony of the plains, but also to all those who have heard the call of the Desert. To one who knows them both, the limitless freedom of desert horizons is the more exhilarating by contrast with the narrow paths of the mountains, while the springs and streams, the woods and flowers and grassy shoulders of the hills are the lovelier for the memory of arid wastes and empty sun-baked water-courses. So it was that for us, who knew so well the parched lands of Baluchistan and south-eastern Persia, much of the glamour of that distant line of snows lay in the promise they held of flowery meadows and deep glens full of greenery for our exploring, of "fresh woods and pastures new" tucked away among their crags and splintered ridges.

But the enchantment of the Kashgarian landscape is not solely of the kind that is lent by distance. The soil is of the curious formation known as "loess," which consists of nothing but fine desert dust, deposited from the air and firmly caked in layers of varying thickness. Loess has two peculiarities: one is its extraordinary fertility, which is such that you have only to poke a stick into the ground and water it regularly,

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[134] and it will grow into a full-sized tree; the other is its tendency to vertical rather than horizontal cleavage. The result of the 312 first is that wherever water can be brought (the climate of the plains is almost rainless, but water from the encircling mountains 241 is plentiful for irrigation) the land is closely cultivated, willows and poplars line every water-channel and the farmsteads are buried in foliage. The second peculiarity results in the landscape being broken up most picturesquely in the neighbourhood of the many rivers by perpendicular cliffs or river-bluffs, seldom more than thirty or forty feet high, but bold of outline and of a rich yellowish hue, with farmsteads perched on top of them and mills nestling below, trees and crops growing to their very edge and greenery in every cranny.

The whole aspect of the better-watered parts of the oases is one of immemorial peace and contentment and of a civilization, such as it is, that has persisted unchanged for centuries. Nowhere could be found a more striking illustration of the strength and permanence of a rural population with its roots deep in the soil, especially when that soil can only be made productive by means of an elaborate system of irrigation. 175 Politically, Kashgaria has had as stormy a history as any country in the world. During the last 2,000 years or a little more the Chinese have conquered it five times, and four times they have been evicted from it. The total period of their occupations up to date only amounts to about 425 years; during the remainder of the time Kashgaria has been the prey of one conquering people after another. Huns, Yüehchih or Indo-Scythians, Hephthalites or White Huns, Tibetans, Uigur Turks, Qara Khitai,[1] Mongols under Chingiz Khan, Dzungar Mongols and Turkis from the Transcaspian Khanates have all won and lost it in turn. Apart from these more cataclysmic changes, civil war has at various periods raged between the larger towns, Kashgar, Yarkand, Khotan and Aqsu. Yet [241] down through the ages generation after generation of peasants have yearly tapped the summer floods from the mountains and have raised their crops of wheat and barley, rice and millet, cotton and maize and melons, while wave after wave of conquest has rolled over their head. Whenever any conqueror or tyrant has interfered overmuch with the cultivator, his greed has been his downfall. A striking recent example of this

[1] The twelfth-century conquerors who gave their name to "Cathay." Stein, "Journal of the Royal Geographical Society," June, 1925, p. 495.

It is a great place

for the treasure-seekers, known as "Taklamakanchis," who are to be found all along the fringe of the great desert; ragged, ever-hopeful men of the tramp type who spend their lives ransacking the remains of ancient Buddhist tombs and temples far out among the sands of the Takla Makan. Occasionally these men find a few coins or seals or flakes of gold-leaf used in decoration; but I never heard of any one of them becoming rich in the process. From the archæological point of view, the activities of the ubiquitous Taklamakanchis cut both ways; Stein acknowledges many debts to them, including assistance, direct or indirect, in the discovery of his chief sites; but he had far oftener to deplore the damage done by them to tombs and temples, stupas and dwelling-houses.

Zawa, 23rd November, 1922.

We are no longer in "Kashgaria" now; we are in the ancient land of Khotan, the "Kingdom of Jade." There is a distinct edge-of-the-desert feel about the countryside, fertile and closely-cultivated though it is. You notice it first when you come to Goma after the long desert stretch from Karghalik. You are getting further east; the great Takla Makan on your left hand is nearly at its broadest; the Kunlun on your right is an arid range. Now and again, quite unexpectedly, you come upon a belt of desert or a village islanded in sand; for here, as in Kansu far to the east, the inexorable "Gobi"—the word means merely "desert"—is encroaching from the north-west, pushing the thin line of cultivation back against the fifteen-hundred mile-long wall of Tibet. One whole village we passed was in its death-throes; a spear-head of dunes from the north had pinned it against the barren foothills, and all the houses had been abandoned except two or three to which the owners still clung pathetically though the sand was heaped right up to the roof. The loess soil in these parts, though apparently no less prolific when watered, is lighter both in weight and in colour than the yellow loess of Kashgar. The climate is evidently warmer, as one would expect, for the houses of the poor are all of wattles plastered with mud, unlike the solid mud-brick structures of the Kashgar oasis. The people too are more vivacious and excitable, as befits the south; one notices it at once in the small boys, whose enterprise and cheekiness in pursuit of a *tamasha* (*e.g.* a foreign traveller and his wife) has to be seen to be believed. The inhabitants of the southern oases are great pigeon-lovers. Outside every farm-house you will see tall poles with cross-poles at the top and rows of fat pigeons roosting on them at sunset. If you sprinkle grain on the sand at the *Kaptar Mazar* or Pigeon Shrine of Qumrabat Padshahim (literally, My King's Castle in the Sand) in the desert between Goma and Khotan, thousands of pigeons will stream out to meet you, a sort of Milky Way of pigeons, and the sound of their cooing and of their myriad wings is like the sea.

Khotan, 24th November, 1922.

This afternoon, eight miles from Khotan, we stopped at an ornate building opening off the bazaar of a small town. The masons were still at work and a stone-carver was chiselling away at a lengthy inscription in Turki on the outer face of the gateway. The legend

[1] [i.e. Goma on the Takla Makan- Analyst]

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sent up it to look for water came back saying that there 487
was none for "two potais" (5 miles), only a spring high up among the mountains which they could not reach. I was not inclined to reload and toil many miles farther up the valley to the next halting-place, so I thought I would have a look myself. Half a mile up the side-glen the soil was damp, and a little farther I came upon a string of tiny pools. The flow was almost imperceptible, and a few yards further on the soil was again dry. But it was enough; we filled our buckets with sweet water, at the rate of about one per hour, and the animals were all watered by midnight. Evidently the Kirghiz (who were particularly shy at this place) had misled our servants and concealed the existence of the spring for fear lest we should drink up all the water and perhaps foul the supply.

Our next camp was a pleasant one, at Qaragor Kul ten thousand feet up among the very tops of the gently-rounded grey-green hills. Here there are no springs at all; a certain amount of rain falls, judging by the grass which covers the land, but there must be something in the geological structure which prevents the formation of springs. On the other hand there are several shallow basins in which the rain-water collects; the Kirghiz camp with their herds of ponies and flocks of sheep and goats beside one of these rain-ponds until they have drunk it dry, when they pass on to another. Qaragor and its neighbourhood lie within the jurisdiction of the Amban of Kelpin two marches to the south, an interesting place well off the beaten track which I would have liked to visit had there been time.

Next day we crossed two passes and descended a long glen, past patches of our first Tien Shan firs, to the wide valley of the Taushkan ("Hare") River. This stream, the main confluent of the Qum Ariq, which it joins close to Aqsu, breaks through from Semirechian territory, where it is known as the Kokshal. Its broad reaches and the snow-clad Tien Shan on its northern bank made a series of fine vistas for our delectation on the two marches to Uch Turfan. The soil [134] of the valley is rich, and we passed through a series of picturesque villages, Somtash and Safarbai, Kok Oinak and [241] Tusma, growing several kinds of root-crops, grain and lucerne, in the intervals between rocky ridges across which our undersized pack animals scrambled wearily.

Uch Turfan which we reached on 11th September is a small town charmingly situated among groves of planes and tall